

10/520999

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SEQUENCE LISTING

<110> Forschungszentrum Juelich GmbH

<120> NUCLEOTIDE SEQUENCES THAT ENCODE CORYNEFORM BACTERIA FOR PROTEINS
PARTICIPATING IN THE BIOSYNTHESIS OF L-SERINE AND METHOD OF
PRODUCING
L-SERINE

<130> 23155

<140>

<141>

<160> 19

<170> PatentIn Ver. 2.1

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<211> 1253

<212> DNA

<213> Corynebacterium glutamicum

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Asp	Gly	Pro	Asn	Arg	Pro	Glu	Leu	Leu	Asp	Ala	Val	Lys	Glu	Ala	Asp
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Ala	Pro	Thr	Ser	Asn	Ile	His	Ser	Ala	Cys	Glu	His	Ala	Ile	Ser	Leu
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Gln Arg Leu Ala Ala Phe Glu Thr Thr Ile Val Ala Tyr Asp Pro Tyr		
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Ala Asn Pro Ala Arg Ala Ala Gln Leu Asn Val Glu Leu Val Glu Leu		
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Asp Glu Leu Met Ser Arg Ser Asp Phe Val Thr Ile His Leu Pro Lys		
195	200	205
Thr Lys Glu Thr Ala Gly Met Phe Asp Ala Gln Leu Leu Ala Lys Ser		
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Lys Lys Gly Gln Ile Ile Asn Ala Ala Arg Gly Gly Leu Val Asp		
225	230	235
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Glu Gln Ala Leu Ala Asp Ala Ile Glu Ser Gly His Ile Arg Gly Ala		
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Gly Phe Asp Val Tyr Ser Thr Glu Pro Cys Thr Asp Ser Pro Leu Phe		
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Lys Leu Pro Gln Val Val Val Thr Pro His Leu Gly Ala Ser Thr Glu		
275	280	285
Glu Ala Gln Asp Arg Ala Gly Thr Asp Val Ala Asp Ser Val Leu Lys		
290	295	300
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Gln Arg Leu Ala Ala Phe Glu Thr Thr Ile Val Ala Tyr Asp Pro Tyr
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Asp Glu Leu Met Ser Arg Ser Asp Phe Val Thr Ile His Leu Pro Lys
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Thr Lys Glu Thr Ala Gly Met Phe Asp Ala Gln Leu Leu Ala Lys Ser
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Lys Lys Gly Gln Ile Ile Asn Ala Ala Arg Gly Gly Leu Val Asp
225 230 235 240

Glu Gln Ala Leu Ala Asp Ala Ile Glu Ser Gly His Ile Arg Gly Ala
245 250 255

Gly Phe Asp Val Tyr Ser Thr Glu Pro Cys Thr Asp Ser Pro Leu Phe
260 265 270

Lys Leu Pro Gln Val Val Val Thr Pro His Leu Gly Ala Ser Thr Glu
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Ala Leu Ala Gly Glu Phe Val Ala Asp Ala Val Asn Val Ser Gly Gly
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Arg Val Gly Glu Glu Val Ala Val Trp Met Asp Leu Ala Arg Lys Leu
325 330 335

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Leu Ser Ala Val Arg Gly Leu Phe Ser Gly Ile Ile Glu Glu Ser Val
370 375 380

Thr Phe Val Asn Ala Pro Arg Ile Ala Glu Glu Arg Gly Leu Asp Ile
385 390 395 400

Ser Val Lys Thr Asn Ser Glu Ser Val Thr His Arg Ser Val Leu Gln

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Ala Ala Pro Asn Leu Lys Ile Val Gly Arg Ala Gly Val Gly Leu Asp
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Asn Val Asp Ile Pro Ala Ala Thr Glu Ala Gly Val Met Val Ala Asn
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Gln Arg Leu Ala Ala Phe Glu Thr Thr Ile Val Ala Tyr Asp Pro Tyr
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Asp Glu Leu Met Ser Arg Ser Asp Phe Val Thr Ile His Leu Pro Lys
195 200 205

Thr Lys Glu Thr Ala Gly Met Phe Asp Ala Gln Leu Leu Ala Lys Ser
210 215 220

Lys Lys Gly Gln Ile Ile Ile Asn Ala Ala Arg Gly Gly Leu Val Asp
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 Glu Gln Ala Leu Ala Asp Ala Ile Glu Ser Gly His Ile Arg Gly Ala
 245 250 255
 Gly Phe Asp Val Tyr Ser Thr Glu Pro Cys Thr Asp Ser Pro Leu Phe
 260 265 270
 Lys Leu Pro Gln Val Val Val Thr Pro His Leu Gly Ala Ser Thr Glu
 275 280 285
 Glu Ala Gln Asp Arg Ala Gly Thr Asp Val Ala Asp Ser Val Leu Lys
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 35 40 45
 Ala Leu Leu Val Arg Ser Ala Thr Thr Val Asp Ala Glu Val Ile Ala
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 Ala Ala Pro Asn Leu Lys Ile Val Gly Arg Ala Gly Val Gly Leu Asp
 65 70 75 80
 Asn Val Asp Ile Pro Ala Ala Thr Glu Ala Gly Val Met Val Ala Asn
 85 90 95
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Gln Arg Leu Ala Ala Phe Glu Thr Thr Ile Val Ala Tyr Asp Pro Tyr
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 Ala Asn Pro Ala Arg Ala Ala Gln Leu Asn Val Glu Leu Val Glu Leu
 180 185 190
 Asp Glu Leu Met Ser Arg Ser Asp Phe Val Thr Ile His Leu Pro Lys
 195 200 205
 Thr Lys Glu Thr Ala Gly Met Phe Asp Ala Gln Leu Leu Ala Lys Ser
 210 215 220
 Lys Lys Gly Gln Ile Ile Asn Ala Ala Arg Gly Gly Leu Val Asp
 225 230 235 240
 Glu Gln Ala Leu Ala Asp Ala Ile Glu Ser Gly His Ile Arg Gly Ala
 245 250 255
 Gly Phe Asp Val Tyr Ser Thr Glu Pro Cys Thr Asp Ser Pro Leu Phe
 260 265 270
 Lys Leu Pro Gln Val Val Val Thr Pro His Leu Gly Ala Ser Thr Glu
 275 280 285
 Glu Ala Gln Asp Arg Ala Gly Thr Asp Val Ala Asp Ser Val Leu Lys
 290 295 300
 Ala Leu Ala Gly Glu Phe Val Ala Asp Ala Val Asn Val Ser Gly Gly
 305 310 315 320
 Arg Val Gly Glu Glu
 325

<210> 11
 <211> 319
 <212> PRT
 <213> *Corynebacterium glutamicum*

<400> 11
 Met Ser Gln Asn Gly Arg Pro Val Val Leu Ile Ala Asp Lys Leu Ala
 1 5 10 15
 Gln Ser Thr Val Asp Ala Leu Gly Asp Ala Val Glu Val Arg Trp Val
 20 25 30
 Asp Gly Pro Asn Arg Pro Glu Leu Leu Asp Ala Val Lys Glu Ala Asp
 35 40 45
 Ala Leu Leu Val Arg Ser Ala Thr Thr Val Asp Ala Glu Val Ile Ala
 50 55 60
 Ala Ala Pro Asn Leu Lys Ile Val Gly Arg Ala Gly Val Gly Leu Asp
 65 70 75 80
 Asn Val Asp Ile Pro Ala Ala Thr Glu Ala Gly Val Met Val Ala Asn
 85 90 95
 Ala Pro Thr Ser Asn Ile His Ser Ala Cys Glu His Ala Ile Ser Leu

100	105	110
Leu Leu Ser Thr Ala Arg Gln Ile Pro Ala Ala Asp Ala Thr Leu Arg		
115	120	125
Glu Gly Glu Trp Lys Arg Ser Ser Phe Asn Gly Val Glu Ile Phe Gly		
130	135	140
Lys Thr Val Gly Ile Val Gly Phe Gly His Ile Gly Gln Leu Phe Ala		
145	150	155
Gln Arg Leu Ala Ala Phe Glu Thr Thr Ile Val Ala Tyr Asp Pro Tyr		
165	170	175
Ala Asn Pro Ala Arg Ala Ala Gln Leu Asn Val Glu Leu Val Glu Leu		
180	185	190
Asp Glu Leu Met Ser Arg Ser Asp Phe Val Thr Ile His Leu Pro Lys		
195	200	205
Thr Lys Glu Thr Ala Gly Met Phe Asp Ala Gln Leu Leu Ala Lys Ser		
210	215	220
Lys Lys Gly Gln Ile Ile Ile Asn Ala Ala Arg Gly Gly Leu Val Asp		
225	230	235
240		
Glu Gln Ala Leu Ala Asp Ala Ile Glu Ser Gly His Ile Arg Gly Ala		
245	250	255
Gly Phe Asp Val Tyr Ser Thr Glu Pro Cys Thr Asp Ser Pro Leu Phe		
260	265	270
Lys Leu Pro Gln Val Val Val Thr Pro His Leu Gly Ala Ser Thr Glu		
275	280	285
Glu Ala Gln Asp Arg Ala Gly Thr Asp Val Ala Asp Ser Val Leu Lys		
290	295	300
Ala Leu Ala Gly Glu Phe Val Ala Asp Ala Val Asn Val Ser Gly		
305	310	315

<210> 12
 <211> 530
 <212> PRT
 <213> Corynebacterium glutamicum

<400> 12		
Met Ser Gln Asn Gly Arg Pro Val Val Leu Ile Ala Asp Lys Leu Ala		
1	5	10
15		
Gln Ser Thr Val Asp Ala Leu Gly Asp Ala Val Glu Val Arg Trp Val		
20	25	30
Asp Gly Pro Asn Arg Pro Glu Leu Leu Asp Ala Val Lys Glu Ala Asp		
35	40	45
Ala Leu Leu Val Arg Ser Ala Thr Thr Val Asp Ala Glu Val Ile Ala		
50	55	60

Ala Ala Pro Asn Leu Lys Ile Val Gly Arg Ala Gly Val Gly Leu Asp
65 70 75 80

Asn Val Asp Ile Pro Ala Ala Thr Glu Ala Gly Val Met Val Ala Asn
85 90 95

Ala Pro Thr Ser Asn Ile His Ser Ala Cys Glu His Ala Ile Ser Leu
100 105 110

Leu Leu Ser Thr Ala Arg Gln Ile Pro Ala Ala Asp Ala Thr Leu Arg
115 120 125

Glu Gly Glu Trp Lys Arg Ser Ser Phe Asn Gly Val Glu Ile Phe Gly
130 135 140

Lys Thr Val Gly Ile Val Gly Phe Gly His Ile Gly Gln Leu Phe Ala
145 150 155 160

Gln Arg Leu Ala Ala Phe Glu Thr Thr Ile Val Ala Tyr Asp Pro Tyr
165 170 175

Ala Asn Pro Ala Arg Ala Ala Gln Leu Asn Val Glu Leu Val Glu Leu
180 185 190

Asp Glu Leu Met Ser Arg Ser Asp Phe Val Thr Ile His Leu Pro Lys
195 200 205

Thr Lys Glu Thr Ala Gly Met Phe Asp Ala Gln Leu Leu Ala Lys Ser
210 215 220

Lys Lys Gly Gln Ile Ile Asn Ala Ala Arg Gly Gly Leu Val Asp
225 230 235 240

Glu Gln Ala Leu Ala Asp Ala Ile Glu Ser Gly His Ile Arg Gly Ala
245 250 255

Gly Phe Asp Val Tyr Ser Thr Glu Pro Cys Thr Asp Ser Pro Leu Phe
260 265 270

Lys Leu Pro Gln Val Val Val Thr Pro His Leu Gly Ala Ser Thr Glu
275 280 285

Glu Ala Gln Asp Arg Ala Gly Thr Asp Val Ala Asp Ser Val Leu Lys
290 295 300

Ala Leu Ala Gly Glu Phe Val Ala Asp Ala Val Asn Val Ser Gly Gly
305 310 315 320

Arg Val Gly Glu Glu Val Ala Val Trp Met Asp Leu Ala Arg Lys Leu
325 330 335

Gly Leu Leu Ala Gly Lys Leu Val Asp Ala Ala Pro Val Ser Ile Glu
340 345 350

Val Glu Ala Arg Gly Glu Leu Ser Ser Glu Gln Val Asp Ala Leu Gly
355 360 365

Leu Ser Ala Val Arg Gly Leu Phe Ser Gly Ile Ile Glu Glu Ser Val
370 375 380

Thr Phe Val Asn Ala Pro Arg Ile Ala Glu Glu Arg Gly Leu Asp Ile

385	390	395	400
Ser Val Lys Thr Asn Ser Glu Ser Val Thr His Arg Ser Val Leu Gln			
405	410	415	
Val Lys Val Ile Thr Gly Ser Gly Ala Ser Ala Thr Val Val Gly Ala			
420	425	430	
Leu Thr Gly Leu Glu Arg Val Glu Lys Ile Thr Arg Ile Asn Gly Arg			
435	440	445	
Gly Leu Asp Leu Arg Ala Glu Gly Leu Asn Leu Phe Leu Gln Tyr Thr			
450	455	460	
Asp Ala Pro Gly Ala Leu Gly Thr Val Gly Thr Lys Leu Gly Ala Ala			
465	470	475	480
Gly Ile Asn Ile Glu Ala Ala Ala Leu Thr Gln Ala Glu Lys Gly Asp			
485	490	495	
Gly Ala Val Leu Ile Leu Arg Val Glu Ser Ala Val Ser Glu Glu Leu			
500	505	510	
Glu Ala Glu Ile Asn Ala Glu Leu Gly Ala Thr Ser Phe Gln Val Asp			
515	520	525	
Leu Asp			
530			

<210> 13
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Construct

<400> 13

tctagagccg gagacgtcaa taaaat

26

<210> 14
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Construct

<400> 14

ggatccgact ggtgagggtc aagtcc

26

<210> 15
<211> 27
<212> DNA

<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic Construct
<400> 15
ggatccttaa ccggaaacgt tcacagc

27

<210> 16
<211> 27
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic Construct
<400> 16
ggatccttac tcttcgcccc cgcgacc

27

<210> 17
<211> 31
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic Construct
<400> 17
ggatacccta agccagaatc catccacaca g

31

<210> 18
<211> 29
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic Construct
<400> 18
ggatccttac ttgccagcaa gaaaagacc

29

<210> 19
<211> 27
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic Construct
<400> 19
ggatccttaa tccaggccac ggccatt

27